

## Acceleration

- The rate at which velocity changes over Time
- Can occur because of a change in speed, direction or both

Acceleration Formula =

$$\frac{(\text{Ending or Final Velocity} - \text{Starting or Initial Velocity})}{\text{Time}}$$

Example of a Label is **m/s/s North or m/s<sup>2</sup>North**

Ex. Alexia is driving 14m/s south. She wants to get home quicker so in 3 seconds she increases her velocity to 23m/s south. What is her acceleration?

$$A = \frac{(23\text{m/s south} - 14\text{m/s south})}{3 \text{ seconds}}$$

$$9\text{m/s}/3\text{s} = 3 \text{ m/s}^2 \text{ south}$$

Dipti is running at a rate of 4 m/s east and then increases her velocity to 7 m/s east over 5 s. What is her acceleration?

Rickie's car is traveling at 18m/s west, when he sees a cop and slows down to 13 m/s west in 2 seconds. What is his acceleration?

Hua is sitting at his desk when suddenly a bee is near him and in 2 seconds he runs out of the room at a velocity of 5 m/s. What was his acceleration?

## Challenge

Eduardo's car has an acceleration of 3 m/s/s south that occurred over 4 seconds. If its initial velocity was 10 m/s, what was its final velocity?

Cierra is running around the track. During a certain amount of time her velocity goes from 1m/s to 5m/s; which gives her an acceleration of 2 m/s/s north. How long did it take her to get to her final velocity?

Ajah's train is traveling at 70 m/s east when it accelerates 6 m/s/s over the next 5 seconds. What will be the train's final velocity after 5 seconds?

